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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,808	01/27/2004	Huang-Ming Chen	N1085-00256 [TSMC2003-08]	2454
54657 7590 11/24/2008 DUANE MORRIS LLP (TSMC) IP DEPARTMENT 30 SOUTH 17TH STREET PHILADELPHIA, PA 19103-4196			EXAMINER MOORE, KARLA A	
			ART UNIT 1792	PAPER NUMBER
			MAIL DATE 11/24/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/765,808	<b>Applicant(s)</b> CHEN ET AL.	
	<b>Examiner</b> KARLA MOORE	<b>Art Unit</b> 1792	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 October 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7,9-12 and 29-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-12 and 29-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings were received on 30 October 2008. These drawings are acceptable.

### ***Allowable Subject Matter***

2. The indicated allowability of claims 1-7, 9-12 and 29-32 is withdrawn in view of the newly discovered reference(s) to Ishii and Ke et al. Rejections based on the newly cited reference(s) follow. The rejections are based stem from a broader interpretation of the pending claims. During patent examination, the pending claims must be "given the broadest reasonable interpretation consistent with the specification." In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969). Examiner apologizes for any inconvenience.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 3 is dependent on a cancelled claim.
5. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant

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regards as the invention. Presently, claim 11 depends from claim 9 recites said electrostatic chuck. However, claim 9 does positively recite an electrostatic chuck.

Examiner has assumed that claim 11 was meant to depend from claim 10.

6. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 12 fails to clearly set forth whether or not the electrostatic chuck recited therein is in fact the electrostatic previously recited in claim 11. Examiner has assumed that it is and interpreted the recitation "an annular landing section of electrostatic chuck" as "an annular landing section of said electrostatic chuck".

7. Correction and/or clarification for the above is requested.

### ***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-2, 4-6, 9-12 and 29-32 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,529,657 to Ishii.

10. Regarding claims 1 and 29-30: In Figure 20, Ishii discloses a plasma etching apparatus (2) comprising a chuck (3) for retaining a substrate (W) and hardware (17 in Figure 20, 6 in other Figures) that is formed of a material (quartz) that includes oxygen

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impregnated throughout and therein (i.e. oxygen permeated thoroughly; filled or saturated with oxygen) such that said oxygen is capable of being released when an etching operation is carried out, wherein the hardware comprises a focus ring and at least a portion of said focus ring is substantially continuously extends directly underneath a peripheral portion of said chuck. Also see, column 4, rows 49-55 and column 13, rows 8-25.

11. With respect to claim 2, said chuck is substantially circular and said focus ring peripherally surrounds said chuck. Also see Figures 2-4, which are overhead views where the overall shapes of the apparatus structures are more visible.

12. With respect to claims 4 and 31, said chuck comprises an electrostatic chuck. See column 4, rows 4-7.

13. With respect to claims 5 and 6, said hardware comprises a focus ring comprised primarily of quartz or ceramic (column 4, rows 49-55).

14. With respect to claim 9, said focus ring is capable of being maintained at a temperature no greater than a temperature of said substrate while etching operation is carried out upon said substrate by way of a coolant reservoir (35; column 5, rows 22-24 and column 8, rows 35-41).

15. With respect to claim 10, said chuck comprises an electrostatic chuck and said substrate may comprise a semiconductor substrate. See above and column 1, rows 10-12). Examiner however notes that inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims. In re Young, 75 F.2d

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966, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)).

16. With respect to claim 11, said focus ring maintains contact with said electrostatic chuck and said electrostatic chuck is capable of being cooled during said etching operation via coolant reservoir (35; column 5, rows 22-24 and column 8, rows 35-41).

17. With respect to claim 12, said focus ring is disposed peripherally around said substrate and includes a portion that rests on an annular landing section of said electrostatic chuck. For Example, see Figures 2-4 and 20.

18. With respect to claim 30, said chuck may be formed of an oxygen-impregnated material. Ishii discloses that the electrostatic portion of the chuck may comprise quartz (column 4, rows 7-14).

19. With respect to claim 32, said chuck is disposed in an etching chamber and said chamber comprises further hardware formed of said oxygen-impregnated material. Ishii discloses forming an insulating plate (5 in Figure 20, 21, elsewhere) of quartz. Also see, column 5, rows 33-39).

### ***Claim Rejections - 35 USC § 103***

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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21. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

22. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii as applied to claims 1-2, 4-6, 9-12 and 29-32 above and further in view of additional teachings of Ishii as discussed below.

23. Ishii discloses a plasma etching apparatus substantially as claimed and as described above.

24. However, the embodiment of Ishii relied upon above does not comprises a further focus ring, said focus ring and said further focus ring forming a focus ring set that peripherally surrounds said chuck.

25. Elsewhere in Ishii, Ishii teaches the provision of a focus ring set comprising a focus ring (6a) and a further focus ring in Figures 5 and 8 for the purpose of improving the flatness of plasma at a peripheral portion of a substrate thereby increasing the in-plane uniformity of plasma processing (column 5, rows 13-21).

26. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a focus ring set comprising a focus

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ring (6a) and a further focus ring in other embodiments of Ishii in order to of improve the flatness of plasma at a peripheral portion of a substrate thereby increasing the in-plane uniformity of plasma processing as taught by Ishii.

### ***Conclusion***

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USP 6,284,093 to Ke et al. teaches that when a quartz shield is eroded during processing it generally releases oxygen (column 7, rows 32-34).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KARLA MOORE whose telephone number is (571)272-1440. The examiner can normally be reached on Monday-Friday, 9:00 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Karla Moore/  
Primary Examiner, Art Unit 1792